

What is claimed is:

1 1. A temperature simulating device for simulating the propellant temperature within
2 ordnance wherein the propellant has thermal properties and a cross-sectional area and the
3 ordnance has housing, comprising:

4 a propellant assembly comprising:

5 a grain simulant having thermal properties, being substantially inert, wherein the
6 thermal properties of the grain simulant approximate the thermal properties of the propellant;

7 means for measuring temperature imbedded into the grain simulant;

8 means for recording temperature data connected to the temperature measuring
9 means; and,

10 means for housing the propellant assembly wherein the housing means simulate the
11 housing of the ordnance.

1 2. The temperature simulating device of claim 1, wherein the grain simulant comprises a
2 rubber material.

1 3. The temperature simulating device of claim 2, wherein the rubber material comprises
2 hydriin rubber.

1 4. The temperature simulating device of claim 2, comprising a plurality of temperature
2 measuring means imbedded into the grain simulant.

1 5. The temperature simulating device of claim 4, comprising four temperature measuring
2 means imbedded into the grain simulant.

1 6. The temperature simulating device of claim 4, wherein the temperature measuring
2 means comprise thermocouples.

1 7. The temperature simulating device of claim 1, further comprising a grain simulant
2 cross-sectional area approximate to the propellant cross-sectional area.

1 8. The temperature simulating device of claim 7, further comprising first and second
2 ends of the grain simulant and an insulating material substantially covering the first and second
3 ends.

1 9. The temperature simulating device of claim 8, wherein the insulating material
2 comprises a polystyrene foam.

1 10. The temperature simulating device of claim 9, wherein the housing means comprises:
2 a rocket motor tube;
3 two end plates substantially covering the insulating material; and,
4 two retaining rings that attach the end plates to the rocket motor tube.

1 11. The temperature simulating device of claim 10, wherein the rocket motor tube
2 comprises a shortened rocket motor tube.

1 12. The temperature simulating device of claim 8, further comprising:
2 an external power source for the temperature recording means connected to an end plate;
3 and,
4 data output connections for the temperature recording means connected to an end plate.

1 13 A method of simulating the temperature of the propellant temperature within
2 ordnance wherein the propellant has thermal properties and a cross-sectional area and the
3 ordnance has housing, comprising the steps of:

4 providing a device comprising a propellant assembly comprising a grain simulant having
5 thermal properties, being substantially inert, wherein the thermal properties of the grain simulant
6 approximate the thermal properties of the propellant, means for measuring temperature imbedded

7 into the grain simulant, means for recording temperature data connected to the temperature
8 measuring means, and, means for housing the propellant assembly wherein the housing means
9 simulate the housing of the ordnance;

10 providing means for data accessing for data compiled by the temperature recording
11 means; and,

12 initiating the data accessing means.

1 14. The method of simulating temperature of claim 13, wherein the data accessing means
2 comprises a location remote to the device.